

## CLAIMS

What is claimed is:

1. A two-phase data transfer protocol circuit for a micropipeline, said circuit comprising:

a control element for generating micropipeline data transfer control signals according to a multiple phase protocol; and

a pulse generator connected to said micropipeline and operable to produce pulse signals responsive to both rising and falling edges of said data transfer control signals.

1        2.    The circuit of claim 1, further comprising a level-  
2        sensitive latch for holding and propagating data through  
3        said micropipeline.

1        3.    The circuit of claim 2, wherein said pulse generator  
2        is a dual-pulse generator that delivers a data transfer  
3        pulse to said level-sensitive latch in response to both  
4        said rising edge and said falling edge of said data  
5        transfer control signals.

1        4.    The circuit of claim 1, wherein said control element  
2        is a Muller C-element.

1        5.    The circuit of claim 1, wherein said pulse generator  
2        comprises:

3            a logic gate having a first input and a second  
4            input, wherein said first input is connected to the  
5            output of said control element; and

6            a delay element connected between the output of said  
7            control element and said second input, wherein a pulse is  
8            produced at the output of said logic gate in accordance  
9            with the delay imparted on said data transfer control  
10           signal by said delay element.

1        6.    The circuit of claim 5, wherein said logic gate is a  
2        XOR gate.

1        7.    The circuit of claim 5, wherein said delay element  
2        comprises an even number of inverters.

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[illegible]

1 9. A method for implementing a two-phase data transfer  
2 protocol between stages in a micropipeline, said method  
3 comprising:

4 generating a data transfer control signal for  
5 transferring data to a next micropipeline stage; and

6 converting both a rising edge and a falling edge of  
7 said data transfer control signal into a pulse signal  
such that said micropipeline transfers data during both  
said rising edge and said falling edge.

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1 10. The method of claim 9, further comprising holding  
2 and propagating data through said micropipeline utilizing  
3 a level-sensitive latch.

1 11. The method of claim 10, wherein said micropipeline  
2 includes a Muller C-element for generating said data  
3 transfer control signal, and wherein said converting a  
4 rising edge and a falling edge of said data transfer  
control signal into pulse signals is performed utilizing  
a dual pulse generator, said method further comprising:

applying said data transfer control signal from said  
Muller C-element to the input of said dual pulse  
generator; and

delivering said data transfer pulses from said dual  
pulse generator to said level-sensitive latch in response  
to a rising edge and a falling edge of said data transfer  
control signal.